21. (New) A peptide analogue of a parent peptide, said parent peptide being derived from an exogenous protein or an endogenous protein, wherein said parent peptide interacts with molecules of the MHC in the context of a pathological condition involving a cell mediated immune response in an animal, wherein:

(a) at least one peptide bond (-CO-NH-) of the parent peptide chain is modified, and wherein the modifications do not comprise a retro type modification or a retro-inverso type modification; or

(b) at least one amino acid of the parent peptide chain is substituted with a non-protein-generating amino acid; or

(c) at least one peptide bond (-CO-NH-) of the parent peptide chain is modified and at least one amino acid of said parent peptide chain is substituted with a non-protein-generating amino acid.

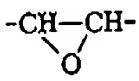
22. (New) The peptide analogue according to claim 21, wherein the animal is man.

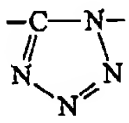
23. (New) The peptide analogue according to claim 21, wherein the pathological condition involving a cell mediated immune response is a pathological condition involving cytotoxic T lymphocytes.

24. (New) The peptide analogue according to claim 21, wherein at least one peptide bond (-CO-NH-) in the peptide chain of the parent peptide is replaced with a bond selected from the group consisting of:

$-CH_2-NH-$	(methyleneamino);
$-CH_2-CH_2-$	(carba);
$-CO-CH_2-$	(ketomethylene);
$-CH_2-O-$	(methyleneoxy);
$-CHOH-CH_2-$	(hydroxyethylene);
-CH=CH-	(E or Z olefin);
-CHOH-CHOH-	(dihydroxyethylene);
-CHCN-NH-	(cyanomethyleneamino);
$-S-CH_2-$	(thiomethylene);
$-CH_2-S-$	(methylenethio);
-CS-NH-	(thioamide);
$-PO_2-NH-$	(phosphonamide);
-CHOH-	(hydroxymethylene);
-NH-CO-NH-	(urea);

Cl cont


(oxirane);

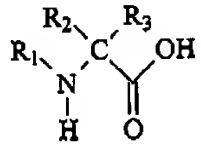

(tetrazole);

$-CH_2-CO-NH-$ (β-homolog);
$-CHOH-CH_2-NH-$ (hydroxyethyleneamino); and
$-CO-NH-NH-$ (hydrazino).

25. (New) The peptide analogue according to claim 21, wherein at least one of the amino acids in the peptide chain of the parent peptide is substituted with a non-protein-generating amino acid, said non-protein-generating amino acid being selected from the group consisting of the following amino acids:

(a) an amino acid of D configuration,

(b) an α-amino acid of the general formula:

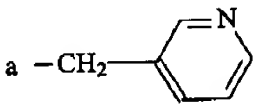


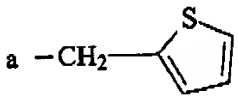
in which :

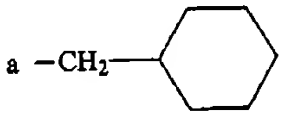
- R_1, R_2 and R_3, represent, independently of each other:
- a hydrogen atom;
- a hydroxyl group;
- an alkyl radical of 1 to 25 carbon atoms;
- a radical containing an allyl group and having from 3 to 25 carbon atoms;
- a radical containing one or more aromatic or non-aromatic rings;
- an aryl group;
- an aryl group having from 6 to 25 carbon atoms;
- a $-CH_3$ (methyl) group;
- a $-CH_2CH_3$ (ethyl) group;
- a $-(CH_2)_4-CH_3$ group;

C1 cont

- a -$CH(CH_3)_2$ (isopropyl) group;
- a -$C(CH_3)_3$ (tert-butyl) group;
- a -Φ (phenyl) group;
- a -CH_2 Φ (benzyl) group;
- a -CH_2 ΦCl (para-chlorobenzyl) group;
- a -CH_2-CH_2 Φ (2-phenylethyl) group;
- a -CH_2CHCH_2 (alkyl) group;
- a methylfluorenyl group;
- a -CH_2CONH_2 (glycolamide) group;
- a -$CH_2CON\ \Phi_2$ (benzhydrylglycolamide) group;
- a -CHOH Φ group;

a  group;

a  group; or

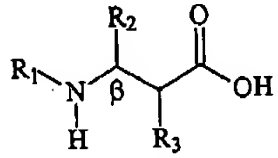
a  group;

wherein one of the two groups R_2 and R_3 may represent a side chain of a natural amino acid when either R_1 or the other of the two groups, R_2 and R_3 do not represent a hydrogen atom; and

wherein R_1, R_2, Cα and N may form an aromatic or non-aromatic heterocycle of 4 to 8 carbon atoms, which may be substituted; or

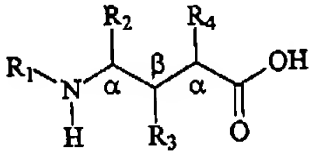
(c) a β-amino acid of the general formula:

C1 cont



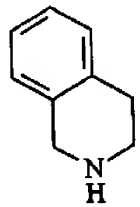
in which R_1, R_2 and R_3, independently of each other, represent a side chain of a natural amino acid or are as defined in section (b); or

(d) a γ-amino acid of the general formula:



in which R_1, R_2 and R_3, independently of each other, represent a side chain of a natural amino acid, or R_1, R_2 and R_3 are as defined in section (b) and R_4 has the same meaning as given for R_1, R_2 and R_3.

26. (New) The peptide analogue according to claim 25, wherein at least one of the amino acids in the peptide chain of the parent peptide is substituted with a non-protein-generating amino acid, wherein R_1, R_2, Cα and N form an aromatic or non-aromatic heterocycle of 4 to 8 carbon atoms, which may be substituted, having the formula:



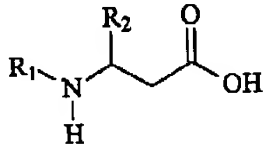
or

C1 cont

as shown.

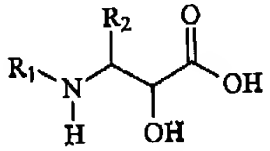
27. (New) The peptide analogue according to claim 25, wherein at least one of the amino acids in the peptide chain of the parent peptide is substituted with a β-amino acid according to section (c), and wherein the β-amino acid is

(i) a β-homo amino acid having the formula:



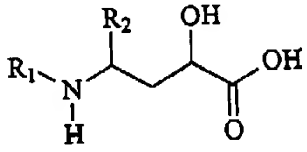
or

(ii) an α-hydroxy β-homo amino acid having the formula:



as shown.

28. (New) The peptide analogue according to claim 25, wherein at least one of the amino acids in the peptide chain of the parent peptide is substituted with a the γ-amino acid according to section (d), and the peptide analogue is a statin derivative of the formula:



as shown.

29. (New) The peptide analogue according to claim 21, wherein the peptide analogue :

Cl cont

(a) is recognized by Major Histocompatibility Complex (MHC) molecules as determined by:

(i) incubating the peptide analogue in the presence of Major Histocompatibility Complex (MHC) molecules derived from the lysis of human or animal cells, the Major Histocompatibility Complex (MHC) molecules being immobilized on a solid support coated with a first antibody that specifically recognizes the molecules of the Major Histocompatibility Complex (MHC) in their conformation which is dependent on their binding to said peptide analogue;

(ii) adding a second antibody, which second antibody is a labelled antibody, to the solid support, said labelled antibody specifically recognizing either the Major Histocompatibility Complex (MHC) molecules in their conformation which is dependent on their binding to the peptide analogue, or a molecule which binds specifically to the molecules of the Major Histocompatibility Complex (MHC) in their above-mentioned conformation, and

(iii) rinsing the solid support and detecting presence of the labelled antibody bound to the solid support,

thereby demonstrating an effect of recognition and association between the molecules of the Major Histocompatibility Complex (MHC) and the peptide analogue studied; or

(b) forming a complex with Major Histocompatibility Complex (MHC) molecules, the stability of which complex is evaluated by carrying out a method for monitoring the binding established between the peptide analogue and the molecules of the Major Histocompatibility Complex (MHC) over time, the method being carried out according to a protocol identical to the procedure of (a) above, except that the step of incubation of the peptide analogue in the presence of the molecules of the Major Histocompatibility Complex (MHC) on the solid support coated with said first antibody is carried out for times ranging from a few minutes to several days.

30. (New) The peptide analogue according to claim 29, wherein the Major Histocompatibility Complex (MHC) molecules derived from the lysis of human

or animal cells are purified by affinity chromatography from a human or an animal cell line.

Cl cont

31. (New) The peptide analogue according to claim 29, wherein the first antibody is a monoclonal antibody.

32. (New) The peptide analogue according to claim 29, wherein the second antibody is labelled by means of coupling with a radioactive, enzymatic or fluorescent label.

33. (New) The peptide analogue according to claim 29, wherein the molecule which specifically binds to molecules of the Major Histocompatibility Complex (MHC), binds Class I Major Histocompatibility Complex (MHC Classl).

34. (New) The peptide analogue according to claim 33, wherein the molecule which specifically binds to molecules of Class I Major Histocompatibility Complex (MHC) is β2-microglobulin.

35. (New) The peptide analogue according to claim 21, wherein the peptide analogue:

(i) (A) induces the appearance and growth of cytotoxic T lymphocytes from human or animal cells *in vitro* in the presence of factors required for the growth and differentiation of the cytotoxic T cells, and/or

(B) induces *in vitro* cytolysis of target cells carrying at the surface of said target cells the peptide analogue associated with the molecules of the Major Histocompatibility Complex (MHC), said cytolysis being by means of cytotoxic T lymphocytes, and/or

- (C) induces *in vitro* the secretion of a cytokine or an interleukin by means of said cytotoxic T lymphocytes, wherein said peptide analogue is either

(a) a T-cell receptor (TCR) agonist, said receptor agonist recognizing the parent peptide (i.e. the antigen) of the cytotoxic T cells, and said receptor agonist being derived from the parent peptide, which behave as agonists or antagonists of said receptors; or

(b) partial agonists of said receptors, and are derived from parent peptides which behave as agonists of said receptors, the partial agonists

inducing, the secretion of one or more cytokines other than those whose secretion is induced with the parent peptides; or

Cl. 1 cont

(ii) (A) induces the appearance and growth of cytotoxic T lymphocytes from human or animal cells *in vitro*, in the presence of factors required for the growth and differentiation of cytotoxic T cells,

- (B) does not induce *in vitro* cytolysis, by means of cytotoxic T lymphocytes, of target cells carrying at their surface the peptide analogue associated with the molecules of the Major Histocompatibility Complex (MHC), said cytotoxic T lymphocytes, ~~1 1 1 2~~,
- (C) does not induce *in vitro* secretion of a cytokine or an interleukin by means of the cytotoxic T lymphocytes,

said peptide analogue being an antagonists of the cytotoxic T cell receptors.

36. (New) The peptide analogue according to claim 35, wherein the cytotoxic T lymphocytes from human or animal cells of (i) (a) are from peripheral blood mononuclear cells (PBMCs).

37. (New) The peptide analogue according to claim 35, wherein the cytotoxic T lymphocytes of (i) (b) are taken from a patient suffering from a pathological condition in which the parent peptide of the peptide analogue studied is involved.

38. (New) The peptide analogue according to claim 35, wherein the cytokine or interleukin of (ii) (c) is IL-2, IL-4 or γ-interferon.

39. (New) The peptide analogue according to claim 21, wherein the parent peptide is involved in melanoma.

40. (New) The peptide analogue according to claim 39, wherein the parent peptide comprises the amino acid sequence of MART1 27-35.

41. (New) The peptide analogue according to claim 40, wherein said parent peptide comprises the Leu^{28}-mutated amino acid sequence of MART1 27-35.

42. (New) The peptide analogue according to claim 40, wherein said parent peptide comprises one or more mutations, said peptide analogue corresponding to said

Cl 1 Con 1

parents peptide in which at least one of the peptide bonds -CO-NH- is modified, with the exception of modifications of the retro or retro-inverso type, said analogues being chosen from peptide analogues of MART1 27-35 in which at least one of the -CO-NH- bonds is replaced with a -CH_2-NH- bond, selected from the analogues Ψ(1-2) to Ψ(8-9) of Table 1 as shown below:

MART1 27-35	**H –A -**	**A -**	**G -**	**I -**	**G -**	**I -**	**L -**	**T - V –OH**
Ψ (1 – 2)	H -A $\Psi_{(CH_2NH)}$A -	G –	I -	G -	I -	L -	T -	V -OH
Ψ (2 - 3)	H –A - A $\Psi_{(CH_2NH)}$	G -	I -	G -	I -	L -	T -	V -OH
Ψ (3 – 4)	H –A -	A - G $\Psi_{(CH_2NH)}$	I -	G -	I -	L -	T -	V -OH
Ψ (4 - 5)	H –A -	A	G -	I $\Psi_{(CH_2NH)}$ G -		I -	L -	T - V -OH
Ψ (5 - 6)	H –A -	A	G -	I -	G $\Psi_{(CH_2NH)}$ I -		L -	T - V -OH
Ψ (6 - 7)	H –A -	A	G -	I -	G	I $\Psi_{(CH_2NH)}$ L -		T - V -OH
Ψ (7 - 8)	H –A -	A	G -	I -	G	I -	L $\Psi_{(CH_2NH)}$ T -	V -OH
Ψ (8 - 9)	H –A -	A	G -	I -	G	I -	L -	T $\Psi_{(CH_2NH)}$ V-OH.

43. (New) The peptide analogue according to claim 42, wherein said parent peptide comprises the Leu^{28}-mutated amino acid sequence of MART1 27-35.

44. (New) The peptide analogue according to claim 40, wherein said parent peptide comprises one or more mutations, said peptide analogue corresponding to said parents peptide in which at least one of the peptide bonds -CO-NH- is modified, with the exception of modifications of the retro or retro-inverso type, said analogues being chosen from peptide analogues of MART1 27-35 in which at least one of the -CO-NH- bonds is replaced with a -CH_2-CO-NH- bond, (a β-homo bond), selected from the analogues β1 to β9 shown below:

MARTI 27-35	**H –A**	**A -**	**G - I -**	**G -**	**I -**	**L -**	**T -**	**V -OH**
β1	H -β-homoA –A -	G -	I -	G -	I -	L -	T -	V -OH
β2	H -A –β-homoA -	G -	I -	G -	I -	L -	T -	V -OH
β3	H –A -A -β-homo	G -	I -	G -	I -	L -	T -	V -OH
β4	H –A -A -	G -β-homoI -		G -	I -	L -	T -	V -OH
β5	H –A -A -	G -	I -β-homoG -		I -	L -	T -	V -OH
β6	H –A -A -	G -	I -	G -β-homoI -		L -	T -	V -OH
β7	H –A -A -	G -	I -	G -	I -β-homoL -		T -	V -OH
β8	H –A -A -	G -	I -	G -	I -	L -β-homoT -		V –OH
β9	H –A -A -	G -	I -	G -	I -	L -	T -β-homoV –OH.	

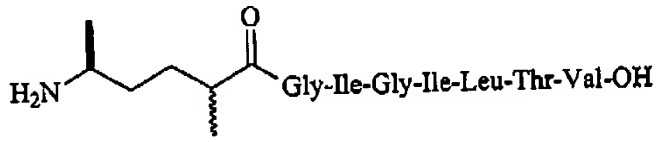
CI Cont

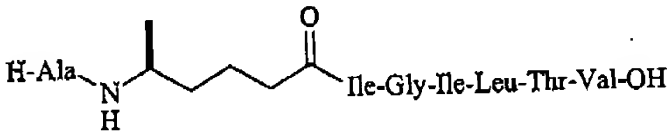
45. (New) The peptide analogue according to claim 44, wherein said parent peptide comprises the Leu^{28}-mutated amino acid sequence of MART1 27-35.

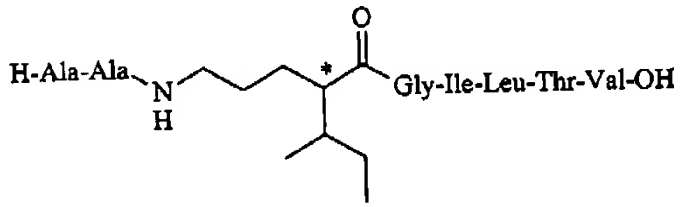
46. (New) The peptide analogue according to claim 45, wherein at least one of the -CO-NH- bonds is replaced with a $-CH_2$-CO-NH- bond and in which the alanine in P2 is replaced with a leucine.

47. (New) The peptide analogue according to claim 40, in which at least one of the -CO-NH- bonds is replaced with a $-CH_2-CH_2$- bond.

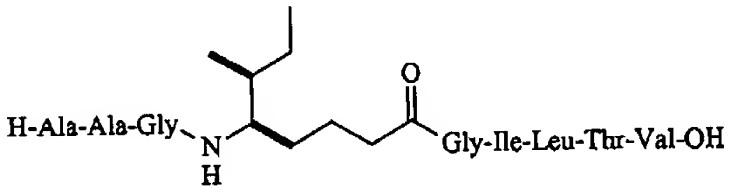
48. (New) The peptide analogue according to claim 47, having a structure selected from the group consisting of the following analogues:

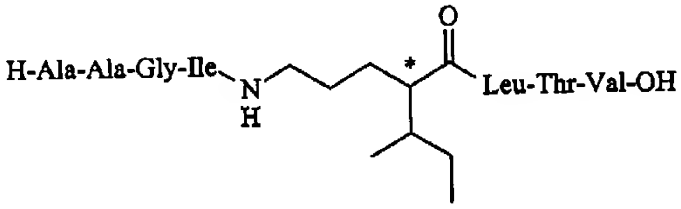


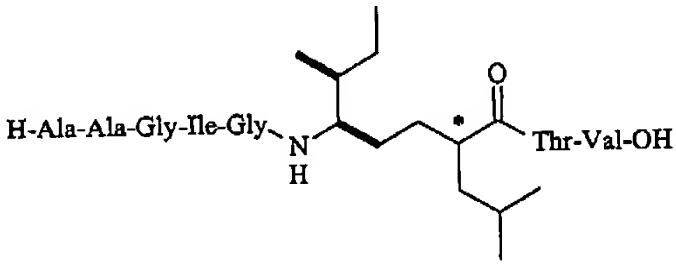


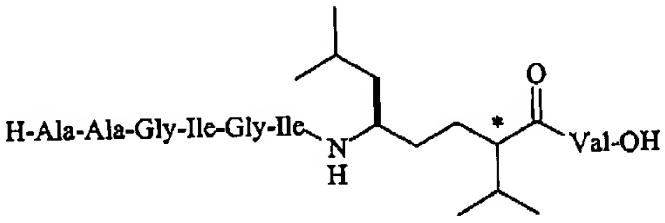


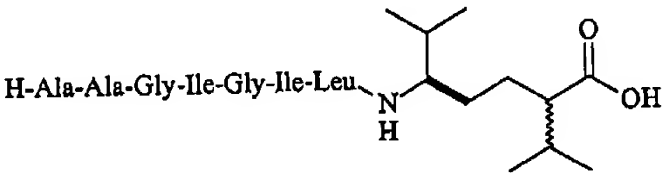
C1 cont











as shown.

C1 cont'

49. (New) The peptide analogue according to claim 21, wherein the parent peptide is a peptide of influenza virus.

50. (New) The peptide analogue according to claim 49, wherein the parent peptide of influenza virus is M58-66.

51. (New) The peptide analogue according to claim 50, wherein at least at least one -CO-NH- peptide bond is modified, with the exception of modifications of the retro or retro-inverso type.

52. (New) The peptide analogue according to claim 51, wherein the analogue is one in which at least one of the -CO-NH- bonds is replaced with a $-CH_2-NH-$ bond selected from the group consisting of the following analogues:

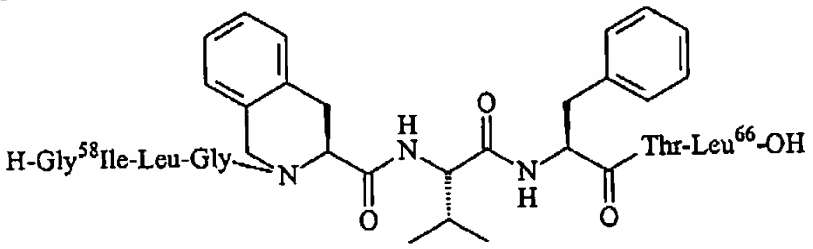
M58-66	H- G -	L -	L -	G -	F- V - F - T - L -	OH
Ψ(1-2)	H- G$\Psi_{(CH_2NH)}$L-		L -	G -	F - V - F - T - L -	OH
Ψ(2-3)	H- G-	L$\Psi_{(CH_2NH)}$L-		G -	F - V - F - T - L -	OH
Ψ(3-4)	H- G -	L -	L$\Psi_{(CH_2NH)}$	G-	F - V - F - T - L -	OH
Ψ(4-5)	H- G -	L -	L -	G$\Psi_{(CH_2NH)}$	F- V - F - T - L -	OH
Ψ(5-6)	H- G -	L -	L -	G -	F$\Psi_{(CH_2NH)}$V- F - T - L -	OH
Ψ(6-7)	H- G -	L -	L -	G -	F - V$\Psi_{(CH_2NH)}$F- T - L -	OH
Ψ(7-8)	H- G -	L -	L -	G -	F - V - F$\Psi_{(CH_2NH)}$T - L -	OH
Ψ(8-9)	H- G -	L -	L -	G -	F - V - F - T$\Psi_{(CH_2NH)}$L-	OH.

53. (New) The peptide analogue according to claim 52, wherein the analogue is one in which at least one amino acid of the peptide chain is substituted with a non-protein-generating amino acid.

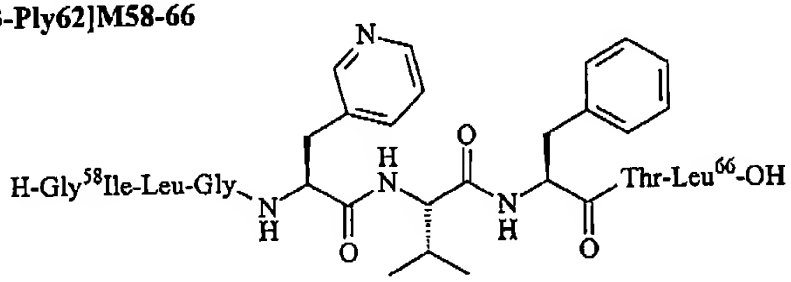
54. (New) The peptide analogue according to claim 53, wherein the non-protein-generating amino acid is selected from the group consisting of the following analogues:

cl
cont

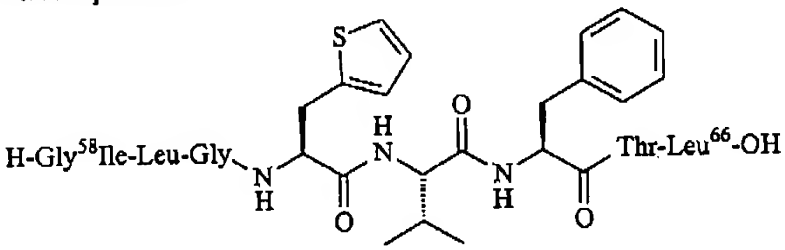
[Tic62]M58-66



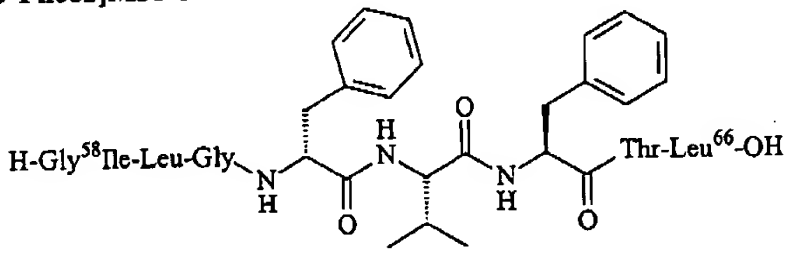
[3-Ply62]M58-66



[2-Tha62]M58-66

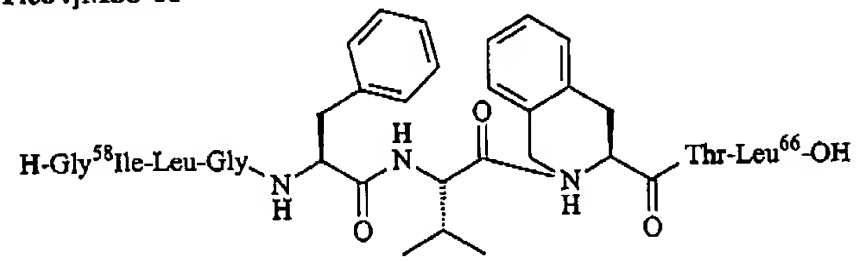


[D-Phe62]M58-66

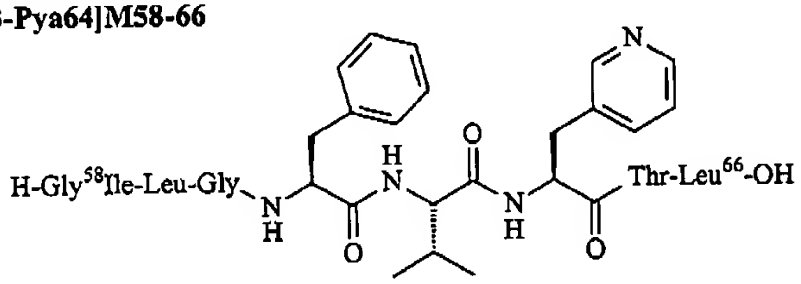


cl j
con.

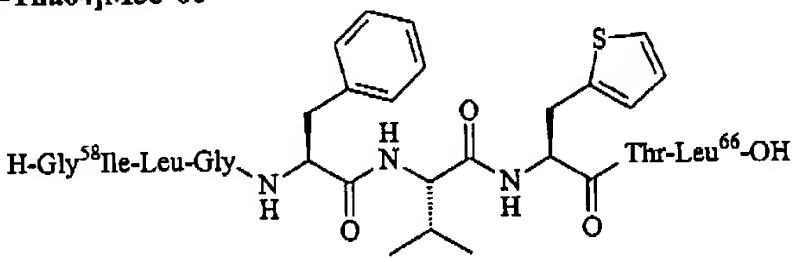
[Tic64]M58-66



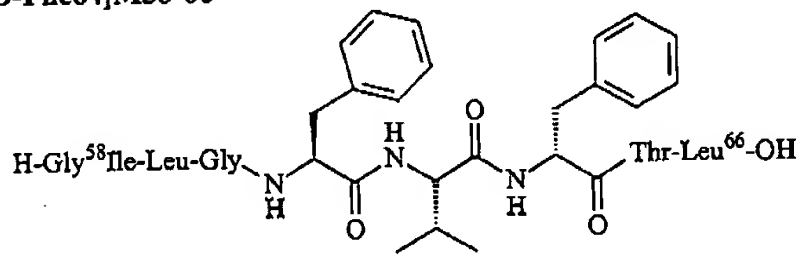
[3-Pya64]M58-66



[2-Tha64]M58-66



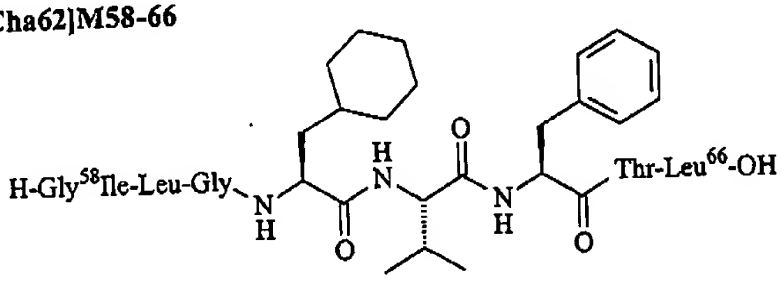
[D-Phe64]M58-66



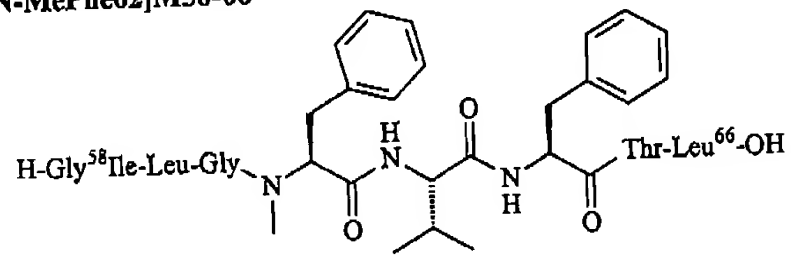
Application Number 09/403,627
Filing Date: May 31, 2000
Docket 759-11
Page 16 of 30

C.) cont

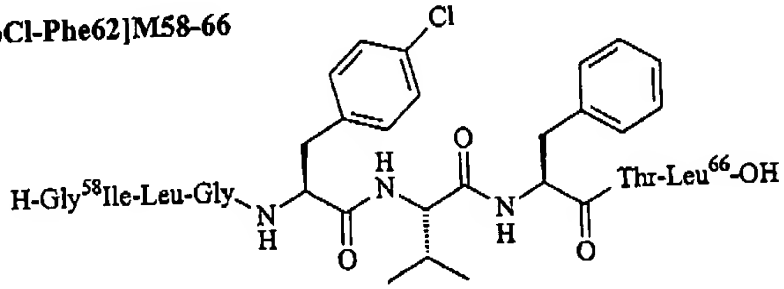
[Cha62]M58-66



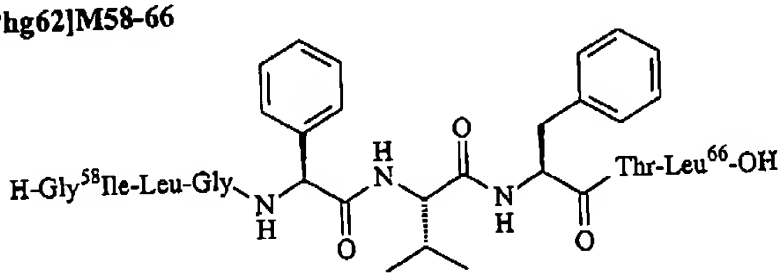
[N-MePhe62]M58-66



[pCl-Phe62]M58-66

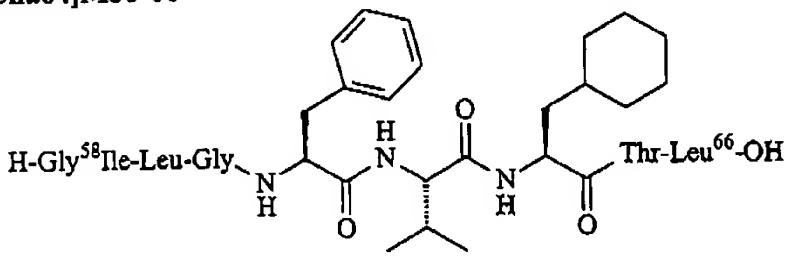


[Phg62]M58-66

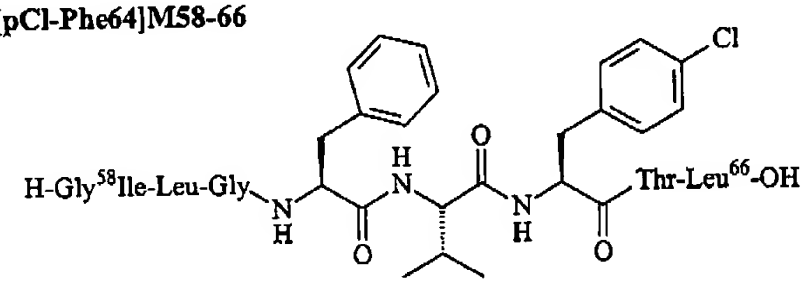


C
Cont

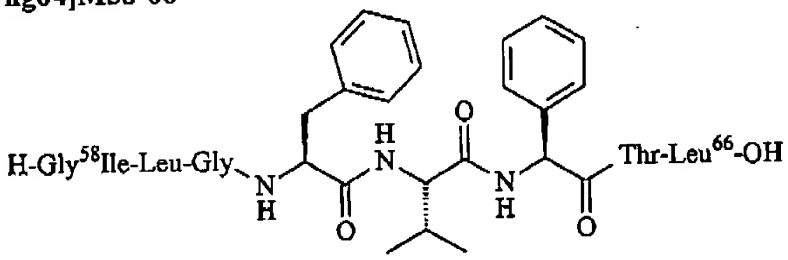
[Cha64]M58-66



[pCl-Phe64]M58-66



[Phg64]M58-66



as shown.

55. (New) The peptide analogue according to claim 21, wherein the parent peptide is a peptide of the AIDS virus (Human immunodeficiency Virus Type I, HIV1).

56. (New) The peptide analogue according to claim 55, wherein the parent peptide is the peptide NEF 84-92 or the peptide GAG 77-85.

Cl. Cont

57. (New) The peptide analogue according to claim 56, wherein at least one of the peptide bonds (–CO-NH-) of the parent peptide is modified, with the exception of modifications of the retro or retro-inverso type.

58. (New) The peptide analogue according to claim 21, wherein said peptide analogue is an analogue of NEF84-92 selected from the group consisting of the peptides NEFRD1-8 as follows:

NEFRD1	AΨ(CH$_2$-NH)VDLSHFLK
NEFRD2	AVΨ(CH$_2$-NH)DLSHFLK
NEFRD3	AVDΨ(CH$_2$-NH)LSHFLK
NEFRD4	AVDLΨ(CH$_2$-NH)SHFLK
NEFRD5	AVDLSΨ(CH$_2$-NH)HFLK
NEFRD6	AVDLSHΨ(CH$_2$-NH)FLK
NEFRD7	AVDLSHFΨ(CH$_2$-NH)LK
NEFRD8	AVDLSHFLΨ(CH$_2$-NH)K

59. (New) The peptide analogue according to claim 21, wherein said peptide analogue is an analogue of NEF84-92 selected from the group consisting of the peptides NEFHEA1-8 as follows:

NEFHEA1	AΨ(CHOH-NH)VDLSHFLK
NEFHEA2	AVΨ(CHOH-NH)DLSHFLK
NEFHEA3	AVDΨ(CHOH-NH)LSHFLK
NEFHEA4	AVDLΨ(CHOH-NH)SHFLK
NEFHEA5	AVDLSΨ(CHOH-NH)HFLK
NEFHEA6	AVDLSHΨ(CHOH-NH)FLK
NEFHEA7	AVDLSHFΨ(CHOH-NH)LK
NEFHEA8	AVDLSHFLΨ(CHOH-NH)K

cl cont

60. (New) The peptide analogue according to claim 21, wherein said peptide analogue is an analogue of GAG 77-85 selected from the group consisting of the peptides GAGRD1-8 as follows:

GAGRD1	SΨ(CH_2-NH)LYNTVATL
GAGRD2	SLΨ(CH_2-NH)YNTVATL
GAGRD3	SLYΨ(CH_2-NH)NTVATL
GAGRD4	SLYNΨ(CH_2-NH)TVATL
GAGRD5	SLYNTΨ(CH_2-NH)VATL
GAGRD6	SLYNTVΨ(CH_2-NH)ATL
GAGRD7	SLYNTVAΨ(CH_2-NH)TL
GAGRD8	SLYNTVATΨ(CH_2-NH)L.

61. (New) A method of prevention or treatment of a pathological condition in an animal, wherein the pathological condition is associated with a cell mediated immune response involving the interaction of a parent peptide derived from an exogenous protein or an endogenous protein, wherein said parent peptide interacts with molecules of the MHC in the context of the pathological condition; said method comprising:

administering to the animal an effective amount of a peptide analogue of the parent peptide to prevent or treat said pathological condition, wherein:

(a) at least one peptide bond (-CO-NH-) of the parent peptide chain is modified, and wherein the modifications do not comprise a retro type modification or a retro-inverso type modification; or

(b) at least one amino acid of the parent peptide chain is substituted with a non-protein-generating amino acid; or

(c) at least one peptide bond (-CO-NH-) of the parent peptide chain is modified and at least one amino acid of said parent peptide chain is substituted with a non-protein-generating amino acid.

62. (New) The method of treatment according to claim 61, wherein the animal is man.

63. (New) The method of treatment according to claim 61, wherein the pathological condition associated with a cell mediated immune response is a pathological condition involving cytotoxic T lymphocytes.

cl
cont

64. (New) A method of treating or preventing a pathological condition involving a cell mediated immune response wherein a parent peptide interacts with molecules of the Major Histocompatibility Complex (MHC) in the context of the pathological condition, said method comprising:

administering to the animal in need thereof an effective amount of a peptide analogue of the parent peptide, said parent peptide being derived from an exogenous protein or an endogenous protein, said analogues corresponding to said parent peptides wherein:

(a) at least one peptide bond (-CO-NH-) of the peptide chain is modified, and wherein the modifications do not comprise a retro type modification or a retro-inverso type modification; or

(b) at least one amino acid of the peptide chain is substituted with a non-protein-generating amino acid; or

(c) at least one peptide bond (-CO-NH-) of the peptide chain is modified and at least one amino acid of the said peptide chain is substituted with a non-protein-generating amino acid.

65. (New) A pharmaceutical composition comprising a peptide analogue of a parent peptide, said parent peptide being derived from an exogenous protein or an endogenous protein, wherein said parent peptide interacts with molecules of the MHC in the context of a pathological condition involving a cell mediated immune response in an animal, said analogues corresponding to said parent peptides wherein:

(a) at least one peptide bond (-CO-NH-) of the parent peptide chain is modified, and wherein the modifications do not comprise a retro type modification or a retro-inverso type modification; or

(b) at least one amino acid of the parent peptide chain is substituted with a non-protein-generating amino acid; or

(c) at least one peptide bond (-CO-NH-) of the parent peptide chain is modified and at least one amino acid of said parent peptide chain is substituted with a non-protein-generating amino acid; and a physiologically acceptable vehicle.

cl cont

66. (New) The pharmaceutical composition according to claim 65, for the prevention or treatment of a pathological condition associated with a cell mediated immune response in an animal involving the interaction of said parent peptides with molecules of the MHC in the context of said pathological condition.

67. (New) The pharmaceutical composition according to claim 66, wherein the animal is man.

68. (New) The pharmaceutical composition according to claim 67, wherein the pathological condition associated with a cell mediated immune response is a pathological condition involving cytotoxic T lymphocytes.

69. (New) A vaccine composition for the prevention or treatment of a condition associated with a cell mediated immune response involving cytotoxic T lymphocytes, wherein a parent peptide interacts with molecules of the MHC in the context of a pathological condition involving a cell mediated immune response in an animal, said parent peptide being an agonist or a partial agonist of a receptor which recognizes the antigen of the cytotoxic T lymphocytes, comprising a peptide analogue of the parent peptide, wherein:

(a) at least one peptide bond (-CO-NH-) of the parent peptide chain is modified, and wherein the modifications do not comprise a retro type modification or a retro-inverso type modification; or

(b) at least one amino acid of the parent peptide chain is substituted with a non-protein-generating amino acid; or

(c) at least one peptide bond (-CO-NH-) of the parent peptide chain is modified and at least one amino acid of said parent peptide chain is substituted with a non-protein-generating amino acid;

and a pharmaceutically acceptable vehicle.

70. (New) The vaccine composition of claim 69, wherein the parent peptide is an agonist of the receptor which recognizes the antigen of the cytotoxic T lymphocytes.

Cl cont

71. (New) The vaccine composition of claim 69, wherein the agonist is a partial agonist of the receptor which recognizes the antigen of the cytotoxic T lymphocytes.

72. (New) The vaccine composition of claim 69, wherein the parent peptide is a peptide from influenza virus.

73. (New) The vaccine composition of claim 72, wherein the parent peptide comprises the amino acid sequence of the MART1 27-35 peptide.

74. (New) The vaccine composition of claim 69, wherein the parent peptide is a peptide from human immunodeficiency virus, HIV1 or HIV2.

75. (New) The vaccine composition of claim 74, wherein the parent peptide of of the human immunodeficiency virus, HIV1 or HIV2 comprises a NEF or GAG sequence.

76. (New) The vaccine composition of claim 69, wherein the vaccine is a vaccine for the prevention or treatment of a neurodegenerative condition, disorder, or disease; or a tumor resulting from a viral infection; a bacterial infection; an autoimmune condition; or an allergy.

77. (New) The vaccine composition of claim 69, wherein the parent peptide comprises a peptide from a virus selected from the group consisting of T-cell leukemia virus (HTLV-1), respiratory syncitial virus, (RSV), coxsackie virus, Epstein-Barr virus, cytomegalovirus, human herpes virus, herpes simplex type 6, human B19 parvovirus, hepatitis B virus, hepatitis C virus, influenza virus, rubella virus, dengue virus, rhinovirus, aphthous fever virus and papilloma virus (HPV).

78. (New) A diagnostic composition for the *in vivo* diagnosis of a pathological condition involving the cell mediated immune response, or for the *in vivo* evaluation of the immune response in the context of said pathological condition by carrying out a skin hypersensitivity reaction by means of intradermal injection of said diagnostic composition, said diagnostic composition comprising a peptide analogue of a parent peptide, said parent peptide being

Cl. cont'd

derived from an exogenous protein or an endogenous protein, wherein said parent peptide interacts with molecules of the Major Histocompatibility Complex (MHC) in the context of the pathological condition involving a cell mediated immune response in an animal, said analogues corresponding to said parent peptides wherein:

(a) at least one peptide bond (-CO-NH-) of the parent peptide chain is modified, and wherein the modifications do not comprise a retro type modification or a retro-inverso type modification; or

(b) at least one amino acid of the parent peptide chain is substituted with a non-protein-generating amino acid; or

(c) at least one peptide bond (-CO-NH-) of the parent peptide chain is modified and at least one amino acid of said parent peptide chain is substituted with a non-protein-generating amino acid;

in combination with a physiologically acceptable vehicle.

79. (New) The diagnostic composition according to claim 78, wherein the cell mediated immune response is a cytotoxic T lymphocyte response.

80. (New) A complex comprising a peptide analogue of a parent peptide, said parent peptide being derived from an exogenous protein or an endogenous protein, wherein said parent peptide interacts with molecules of the Major Histocompatibility Complex (MHC) in the context of the pathological condition involving a cell mediated immune response in an animal, said analogues corresponding to said parent peptides wherein:

(a) at least one peptide bond (-CO-NH-) of the parent peptide chain is modified, and wherein the modifications do not comprise a retro type modification or a retro-inverso type modification; or

(b) at least one amino acid of the parent peptide chain is substituted with a non-protein-generating amino acid; or

(c) at least one peptide bond (-CO-NH-) of the parent peptide chain is modified and at least one amino acid of said parent peptide chain is substituted with a non-protein-generating amino acid;

and a component of the major histocompatibility complex (MHC).

cl cont

81. (New) The complex according to claim 80, which is a Major Histocompatibility Complex (MHC)-peptide analogue binary complex consisting of the peptide analogue and a component of the Major Histocompatibility Complex (MHC).

82. (New) The complex according to claim 80, comprising the peptide analogue, a component of the Major Histocompatibility Complex (MHC) and a T cell receptor.

83. (New) The complex according to claim 80, which is a ternary complex consisting of the peptide analogue, a component of the Major Histocompatibility Complex (MHC)-peptide and a T cell receptor.

84. (New) A method for the *in vitro* diagnosis of a pathological condition in an animal or man, involving a cell mediated immune response, comprising:

- contacting a biological sample comprising MHC molecules and T cell receptors, obtained from a patient, with a peptide analogue according to claim 21,
- forming a binary complex between said peptide analogue and the MHC molecules present in said sample;
- said contacting being under conditions allowing reaction between the T cell receptors present in the biological sample, and the binary complex to form a MHC-peptide analogue-T cell receptor ternary complex; and
- detecting *in vitro* the MHC-peptide analogue-T cell receptor ternary complex formed.

85. (New) The method according to claim 84 wherein the pathological condition involving a cell mediated immune response comprises cytotoxic T lymphocyte activity and wherein the pathological condition is associated with the presence, in a patient's body, of exogenous or endogenous peptides interacting with molecules of the MHC, and which are directly or indirectly involved in the process of development of the pathological condition .

Cl cont'd

86. (New) A kit for carrying out the method for the *in vitro* diagnosis of a pathological condition in an animal or man, involving a cell mediated immune response comprising:
a peptide analogue according to claim 21, and
a reagent for detecting an MHC-peptide analogue-T cell receptor ternary complex.

87. (New) A kit according to claim 86 wherein the reagent for detecting the MHC-peptide analogue-T cell receptor ternary complex comprises a detectable label.

88. (New) A kit according to claim 86 further comprising a second reagent for detection of the reagent for detecting an MHC-peptide analogue-T cell receptor ternary complex.

89. (New) A kit according to claim 86 further comprising a reagent for making a medium suitable for forming an immunological reaction.

90. (New) An antibody directed against a first binary complex consisting of a peptide analogue according to claim 21 and a component of the Major Histocompatibility Complex (MHC), said antibody being obtained by immunizing an animal with at least one binary complex consisting of a peptide analogue according to claim 21 and a component of the Major Histocompatibility Complex (MHC), said antibody forming a complex with said first binary complex.

91. (New) The antibody according to claim 90, wherein the antibody is obtained by immunizing the animal with at least one binary complex, comprising the first binary complex.

92. (New) The antibody according to claim 90, wherein the antibody is obtained by immunizing the animal with the first binary complex.

93. (New) A pharmaceutical composition comprising:
an antibody directed against a first binary complex consisting of a peptide analogue according to claim 21 and a component of the Major Histocompatibility Complex (MHC), said antibody being obtained by

cl cont

immunizing an animal with at least one binary complex consisting of a peptide analogue according to claim 21 and a component of the Major Histocompatibility Complex (MHC), said antibody forming a complex with said first binary complex; and

a physiologically acceptable vehicle.

94. (New) A process for screening peptide analogues according to claim 21 comprising the following steps:

incubating the peptide analogue in the presence of molecules of the MHC, derived from the lysis of human cells or animal cells, or purified from human or animal cell lines, on a solid support coated with a first antibody which specifically recognizes the molecules of the MHC in their conformation which is dependent on being bound to the peptide analogue, for times ranging from a few minutes to several days,

adding to the solid support coated with the first antibody a second antibody which is labelled, the labelled second antibody specifically recognizing either the molecules of the MHC in a conformation which is dependent on their binding to the peptide analogue, or a molecule which itself binds specifically to the molecules of the MHC in said conformation,

rinsing the solid support and detecting the second labelled antibody bound to the solid support, and

evaluating of the duration of the association between said peptide analogue and the molecules of the MHC.

95. (New) A process for screening peptide analogues according to claim 94, wherein the MHC purified from human or animal cell lines is purified by affinity chromatography.

96. (New) A process for screening peptide analogues according to claim 94, wherein the first antibody is a monoclonal antibody.

97. (New) A process for screening peptide analogues according to claim 94, wherein the second antibody is labelled by means of coupling with a radioactive, enzymatic or fluorescent label.

98. (New) A process for screening peptide analogues according to claim 94, wherein the molecule which itself binds specifically to the molecules of the MHC in the conformation which is dependent on their binding to the peptide analogue, is a β2-microglobulin which specifically recognizes the molecules of the MHC of class I.

99. (New) A kit for carrying out a process for screening peptide analogues according to claim 93, comprising:

(a) molecules of the MHC, and

(b) -(i) an antibody which specifically recognizes molecules of the MHC in the conformation which is dependent on being bound to a peptide analogue according to claim 21 or a molecule which itself binds specifically to the molecules of the MHC in the conformation which is dependent on binding to the peptide analogue,

or

- (ii) a labelled antibody, this antibody specifically recognizing either the molecules of the MHC in their conformation which is dependent on their binding to the peptide analogue, or a molecule which itself binds specifically to the molecules of the MHC in the conformation which is dependent on binding to the peptide analogue, and

(c) optionally further comprising a protocol for carrying out the process.

100. (New) The kit for carrying out a process for screening peptide analogues according to claim 99, wherein the antibody of step (b)(i) is bound to a solid support, or is supplied with reagents required for binding to the solid support.

101. (New) The kit for carrying out a process for screening peptide analogues according to claim 99, wherein the labelled antibody is labelled by means of coupling with a radioactive, enzymatic or fluorescent label.

102. (New) The kit for carrying out a process for screening peptide analogues according to claim 99, the molecule of step (b) (ii) which itself binds specifically to the molecules of the MHC in the conformation which is dependent on binding to the peptide analogue is β2-microglobulin which specifically recognizes the molecules of the MHC of class I.

Cl cont

103. (New) The kit for carrying out a process for screening peptide analogues according to claim 99, further comprising a control peptide or control peptide analogue, wherein the control peptide or control peptide analogue is bound by MHC and provides the conformation which is bound by the antibody which specifically recognizes molecules of the MHC in the conformation which is dependent on being bound to a peptide analogue according to claim 21 or a molecule which itself binds specifically to the molecules of the MHC in the conformation which is dependent on binding to the peptide analogue.